UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,106	10/21/2003	Eytan Barouch		3748

7590 03/08/2006

Eytan Barouch
Suite 1004
1265 Beacon St.
Brookline, MA 02446

EXAMINER	
AKANBI, ISIAKA O	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,106	BAROUCH ET AL.	
	Examiner	Art Unit	
	Isiaka O. Akanbi	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 March 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

The examiner objected to the drawings filed 04 March 2004. The drawings are objected to under 37 CFR 1.83(a) because they fail to show structural details as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 11 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The claims in question were drawn to a method of solving Material-Maxwell's equation for the analysis of light scattered off 2D or 3.D micro or nanoelectronic structures, such that all wavelengths of the incident light can be analyzed and computed simultaneously in real time on a single processor for transverse electric (TE) and for transverse magnetic (TM) polarizations. However, the substance of the claims was directed to the physical structure of the device and contained no positive, active method "steps".

Claim 6 recites the limitation "rendering algorithm" in line 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "seed Hessian" in line 1-2. There is insufficient antecedent basis for this limitation in the claim.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to how "unique method" perform the function of the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Conrad et al. (5,963,329) or Marx et al. (5,880,838).

As regard to claims 1 and 16, Conrad or Marx discloses a method of solving Material-Maxwell's equation for the analysis of light scattered off 2D or 3D micro or nanoelectronic structures, such that all wavelengths of the incident light can be analyzed and computed simultaneously in real time on a single processor for transverse electric (TE) and for transverse magnetic (TM) polarizations (fig. 12)(col. 4, line 28-59)(col. 9, line 9-24) or (col. 17, line 40-col. 18, line 1-10).

As to claim 2, according to claim 1, Conrad or Marx discloses wherein said method is sufficiently general that it can be used on either single or multiple processors (fig. 1)(col. 4, line 35-58) or (col. 37, line 2-4).

As to claim 3, wherein said method is applicable to microwave technology of range of a few cm wavelengths these is an intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 4, Conrad or Marx discloses wherein said method is able to process complicate lossy material structures, utilizing a unique method of analyzing very large domains in terms of a transformation of small finite domains (col. 2, line 40-43) or (col. 8, line 65-67).

As to claim 5, wherein said method is applied to microchip fabrication encompassing a range of 50nm-1500nm uniformly these is an intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 6, Conrad or Marx discloses wherein said method is comprising of a "rendering algorithm" that enables the use of a larger numerical grid than the smallest feature sizes, but that enables the scattering target to be characterized up to a fraction of this size (col. 4, line 5-59) or (col. 4, line 41-55)(col. 14, line 49-61), further this is an intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 7, Conrad or Marx discloses wherein said method is employed in the computation of reflected spectra for TE&TM polarization, reporting their ratio as a function of frequency, thus eliminating any spurious oscillations associated with the source (fig. 12)(col. 10, line 35-67) or (col. 4, line 14-20)(col. 8-9). Additionally, this claim is a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 8, wherein a method of constructing an electrical susceptibility function in time-domain space utilizing measurable optical constants whose components of said function are Lorenz poles, Xlorenz-linear poles, Debye poles, conductivity term, a non-magnetized plasma term and a limiting constant for infinite wavelength is a recitation of the intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 9, Conrad or Marx discloses wherein said method is satisfying strict causality properties in time domain space (col. 4, line 28-67) or (col. 7, line 46-67), further this claim is a recitation of the intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claims 10, 11 and 12, wherein said method guarantees that the refractive index and the absorption coefficients (n&k) are positive for all Wavelengths. This claims are a recitation of the intended use of the claimed invention, which must result in a structural

difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 13, Conrad or Marx discloses method of scattering object's complex shape and composition (col. 2, line 7-18) or (col. 1, line 66-col. 2, line 1-50)(col. 4, line 14-20)(col. 15, line 19-29). Additionally, this claim is a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 14, Conrad or Marx discloses wherein said method constructs a seed Hessian without employing numerical derivative, using local parameter minimization as a guide (col. 7, line 29-59). Additionally, this claim is a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

As to claim 15, Conrad or Marx discloses wherein said method makes the reconstruction problem less ill posed by reducing the oscillatory nature of the scattered radiation, by eliminating the need to normalize the radiation source, and analyzing the ratio and relative phase of the TM and TE polarization for each wavelength of interest as the backbone of the cost function (col. 1, line 66-col. 3, line 29). Additionally, this claim is a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. The prior art structure is capable of performing this intended use, which meets the terms of the claim.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art method of solving Material-Maxwell's equation for the analysis of light scattered that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
March 2, 2006

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
3/MARCH/06